

**REMARKS/ARGUMENTS**

Reconsideration and allowance of this application are respectfully requested.

Currently, claims 1 and 3-13 are pending in this application.

**Request for Return of Fully Initialed Form PTO-1449:**

A copy of the Form PTO-1449 filed February 19, 2004 returned to Applicant was only partially initialed. In particular, foreign patent document JP 2002-136156 was not initialed as being considered. Applicant believes that this was merely an oversight. Applicant has attached a copy of the partially initialed Form PTO-1449 which was returned to Applicant. Applicant respectfully requests that JP 2002-136156 be initialed on that form as an indication that it has been considered by the Examiner.

**Rejections Under 35 U.S.C. §102 and §103:**

Claims 1 and 2 were rejected under 35 U.S.C. §102(b) as allegedly being anticipated by Hoffmann et al (U.S. '796, hereinafter "Hoffmann"). Applicant respectfully traverses this rejection with respect to still pending claim 1.

For a reference to anticipate a claim, each element must be found, either expressly or under principles of inherency, in the reference. Each element of the claimed invention is not found in Hoffmann. For example, Hoffmann fails to disclose "wherein...the arithmetic means integrates the charging current at every integration period variable with the charging voltage to calculate the charging amount," as required by independent claim 1 and its dependents.

The above noted limitation is supported by, for example, Fig. 5 and page 20, lines 6-8 of the originally-filed specification which states "tv represents the period of a frequency proportional to the charging voltage of the output characteristic of the VCO

circuit 21 (f).” In an exemplary embodiment of the specification, a charge amount of a piezo stack 7 is calculated by integrating a charging current at an integration period ( $\tau_v$ ) which is variably determined based on a charging voltage (vp, 21, 22).

Page 2 of the Office Action makes reference to col. 5, line 57 - col. 6, line 2 of Hoffmann. This portion of Hoffmann states, *inter alia*, “The energy E may be determined, for example, by measuring the capacitor voltage  $U_c$  or by multiplication of the value of the current flowing through the actuator P by the value of the actuator voltage  $U_p$ , and integrating the result of multiplication over the time of the charging or discharging operation.” While this portion of Hoffmann thus teaches calculating energy by integrating a multiplication of a voltage  $U_p$  and a current of a piezoelectric actuator P, it fails to specifically disclose details of the integration for calculating energy as claimed such as the charging current being integrated at every integration period variable with the charging voltage to calculate the charging amount.

Accordingly, Applicant respectfully requests that the rejection under 35 U.S.C. §102 be withdrawn.

Claims 3-5 were rejected under 35 U.S.C. §103 as allegedly being unpatentable over Schrod (U.S. ‘252) in view of Hoffmann. While Schrod discloses a circuit for driving capacitive actuators P1-Pn, Schrod fails to remedy the above described deficiencies of Hoffmann. Accordingly, Applicant respectfully requests that the rejection of claims 3-5 (which depend from base claim 1) under 35 U.S.C. §103 be withdrawn.

**New Claims:**

New claims 6-13 have been added to provide additional protection for the invention. Claims 6-7 depend from claim 1 and are thus allowable for at least the reasons

**FUKAGAWA et al.**  
**Application No. 10/780,697**  
**November 28, 2005**

discussed above with respect to base claim 1. Claims 8-13 require, *inter alia*, "the charging current is integrated at every integration period variable with the charging voltage to calculate the charging amount." Applicant thus submits that claims 8-13 are allowable.

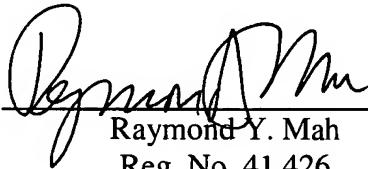
**Conclusion:**

Applicant believes that this entire application is in condition for allowance and respectfully requests a notice to this effect. If the Examiner has any questions or believes that an interview would further prosecution of this application, the Examiner is invited to telephone the undersigned.

Respectfully submitted,

**NIXON & VANDERHYE P.C.**

By:



---

Raymond Y. Mah  
Reg. No. 41,426

RYM:sl  
901 North Glebe Road, 11th Floor  
Arlington, VA 22203-1808  
Telephone: (703) 816-4044  
Facsimile: (703) 816-4100